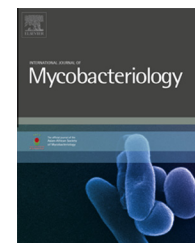


Available at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/IJMYCO](http://www.elsevier.com/locate/IJMYCO)

# The inconsistent definitions for tuberculosis currently used in the literature

W.X. Shandera<sup>\*</sup>, O. Merchant

Department of Medicine, Baylor College of Medicine, Houston, TX, USA

## ARTICLE INFO

### Article history:

Received 17 September 2014

Accepted 21 September 2014

Available online 4 November 2014

### Keywords:

Definition

Tuberculosis

Extra-pulmonary

Miliary

Disseminated

Pulmonary

## ABSTRACT

**Aims:** To assess the definitions used by authors for pulmonary and extrapulmonary tuberculosis, definitions which are ostensibly standardized in the literature by the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) and American Thoracic Society (ATS) definitions.

**Methodology:** Thirty-seven papers used for the study of extrapulmonary tuberculosis, identified by PubMed and Google Scholar searches identified through an earlier study on extrapulmonary tuberculosis and updated, were analyzed for specifics regarding how extrapulmonary, pulmonary, pleural and disseminated tuberculosis were defined. Data were tabulated and analyzed using STATA 11.

**Results:** Thirty-one (84%) of the papers provided data on the numbers of pulmonary and extra-pulmonary cases. The papers were from 34 institutions in 20 nations. Only 14 (38%) of the series reported the number of patients with combined pulmonary and extrapulmonary disease. Among all patients, in only four were the combined patients analyzed as a completely separate category with combined cases otherwise excluded (11), counted as extrapulmonary (7), as pulmonary (3) or both extrapulmonary and pulmonary (1) tuberculosis or unclearly documented (11). Pleural disease was included as extrapulmonary in 25 patients (68%), but as pulmonary in 4 (11%), and there was no criterion in the remaining 8 (22%). In 18 of the studies where disseminated or miliary disease were defined, 5 of the disseminated were categorized otherwise (e.g., along with combined pulmonary and extrapulmonary cases).

**Conclusion:** There is much confusion in the categorization of clinical tuberculosis. The standardized WHO, CDC, and ATS definitions are not always adhered to in collating and analyzing tuberculosis data by authors studying extrapulmonary tuberculosis. The recommendation that pleural disease be considered extrapulmonary is not adhered to in a sizable percentage (32%) of studies and the exclusion of disseminated or miliary disease in a subset of patients is also inconsistent. More restrictive guidelines are needed in the definitions used for tuberculosis so that studies and meta-analyses can be performed with greater validity.

© 2014 Asian-African Society for Mycobacteriology. Published by Elsevier Ltd. All rights reserved.

<sup>\*</sup> Corresponding author. Tel.: +1 713 873 3389; fax: +1 713 798 6400.

E-mail address: [shandera@bcm.edu](mailto:shandera@bcm.edu) (W.X. Shandera).

<http://dx.doi.org/10.1016/j.ijmyco.2014.09.016>

2212-5531/© 2014 Asian-African Society for Mycobacteriology. Published by Elsevier Ltd. All rights reserved.